LISTING OF THE CLAIMS

The claims are listed purely for the convenience of the Examiner. No claims have been added, canceled, or amended:

1.   (*Previously presented*) An image conversion method in which image data represented by a required number of pixels is obtained from original image data represented by a predetermined number of pixels, comprising the steps of:

carrying out a first, initial image conversion, without previously enlarging which controls said original image data to said predetermined number of pixels, by obtaining, by a first interpolation calculation, image data represented by a number of pixels which is one-half of the predetermined number of pixels, from the original image data represented by the predetermined number of pixels;

preparing an intermediate image by repeatedly carrying out the first, initial image conversion at a rate of one-half of the number of pixels, until a number of pixels close to the required number is reached; and

carrying out a second image conversion by obtaining, from the intermediate image, image data represented by the required number of pixels.

2.   (*Previously presented*) An image conversion method in which image data represented by a required number of pixels is obtained from original image data represented by a predetermined number of pixels, comprising the steps of:

carrying out a first image conversion by obtaining, by a first interpolation calculation, image data represented by a number of pixels which is one-half of the predetermined number of pixels, from the original image data represented by the predetermined number of pixels;

preparing an intermediate image by repeatedly carrying out the first image conversion at a rate of one-half of the number of pixels, until a number of pixels close to the required number is reached; and

carrying out a second image conversion by obtaining, from the intermediate image, image data represented by the required number of pixels;

wherein the first interpolation calculation, which is carried out when the first image conversion for preparing the intermediate image is effected, is different from a second interpolation calculation, which is carried out when the image conversion for obtaining the image data represented by the required number of pixels from the intermediate image is effected.

3.   (*Original*) An image conversion method according to claim 1, wherein the intermediate image has a number of pixels which is greater than and closest to the required number of pixels.

4.   (*Previously presented*) An image conversion method in which image data represented by a required number of pixels is obtained from original image data represented by a predetermined number of pixels, comprising the steps of:

carrying out a first image conversion by obtaining, by a first interpolation calculation, image data represented by a number of pixels which is one-half of the predetermined number of pixels, from the original image data represented by the predetermined number of pixels;

preparing an intermediate image by repeatedly carrying out the first image conversion at a rate of one-half of the number of pixels, until a number of pixels close to the required number is reached; and

carrying out a second image conversion by obtaining, from the intermediate image, image data represented by the required number of pixels;

wherein the intermediate image is prepared by dividing the original image data into partial images and repeatedly carrying out the first image

conversion to one-half of the number of pixels for each of the partial images.

5.   (*Previously presented*) An image conversion method in which image data represented by a required number of pixels is obtained from original image data represented by a predetermined number of pixels, comprising the steps of:

carrying out a first image conversion by obtaining, by a first interpolation calculation, image data represented by a number of pixels which is one-half of the predetermined number of pixels, from the original image data represented by the predetermined number of pixels;

preparing an intermediate image by repeatedly carrying out the first image conversion at a rate of one-half of the number of pixels, until a number of pixels close to the required number is reached; and

carrying out a second image conversion by obtaining, from the intermediate image, image data represented by the required number of pixels;

wherein the first and second interpolation calculations are carried out by using at least two types of interpolation calculation methods.

6.   (*Previously presented*) An image conversion method in which image data represented by a required number of pixels is obtained from original image data represented by a predetermined number of pixels by repeatedly carrying out a first interpolation calculation at a rate of one-half of the number of pixels,

wherein image data represented by the required number of pixels is obtained by carrying out a second interpolation calculation at a rate of x (wherein 1>x>1/2) of a number of pixels at one of a beginning step, an intermediate step, and a final step of image conversion.

7.   (*Previously presented*) An image conversion method in which image data represented by a required number of pixels is obtained from original image data represented by a predetermined number of pixels, comprising the steps of:

obtaining by interpolation calculation, from the original image data represented by the predetermined number of pixels, image data represented by a number of pixels of 1 / N (wherein N is an integer of 2 or more) or greater, by using an N-size filter used to obtain an interpolated point from N pixels, thereby allowing image conversion; and

obtaining image data represented by the required number of pixels by carrying out the interpolation calculation in plural stages.

8.   (*Original*) An image conversion method according to claim 7, wherein the required number of pixels is 1 / N (wherein N is an integer of 2 or more) or less.

9.   (*Previously presented*) An image conversion method according to claim 7, wherein the interpolation calculations carried out in plural stages are effected in order from that of the lowest conversion rate.

10.   (*Original*) An image conversion method according to claim 7, wherein the interpolation calculation is carried out by using at least two types of interpolation calculation methods.

11.   (*Previously presented*) An image conversion apparatus comprising:

setting means for setting a number of pixels after a first and a second image conversion of original image data represented by a predetermined number of pixels;

interpolation calculation means which effects the second image conversion by obtaining, by interpolation calculation, image data represented by pixels of the number set by said setting means; and

control means which controls said interpolation calculation means such that said interpolation calculation means converts the original image data into an intermediate image having a number of pixels close to the number of pixels set by said setting means by repeatedly effecting the first image conversion to one-half and such that said interpolation calculation means carries out the second image conversion to further make the intermediate image into the set number of pixels.

12. (*Previously presented*) An image conversion apparatus comprising:

setting means for setting a number of pixels after a first and a second image conversion of original image data represented by a predetermined number of pixels;

first interpolation calculation means which effects image conversion by obtaining, by interpolation calculation a first and from the original image data represented by the predetermined number of pixels, image data represented by pixels of a number which is one-half of the predetermined number of pixels, and prepares an intermediate image by repeatedly effecting the first image conversion at a rate of one-half until a number of pixels close to the required number of pixels is reached; and

second interpolation calculation means which effects a second interpolation calculation such that the intermediate image is further made into image data represented by pixels of the number set by said setting means.

13. (*Previously presented*) An image conversion apparatus comprising:

setting means for setting a number of pixels after image conversion of original image data represented by a predetermined number of pixels;

interpolation calculation means which effects

interpolation calculation at a rate of 1/N (wherein N is an integer of 2 or more) or greater by using an N-size filter used for obtaining an interpolated point from N pixels; and

control means which controls said interpolation calculation means so that image data represented by pixels of the number set by said setting means is obtained by effecting the interpolation calculation in plural stages.

14. (*Previously presented*) An image conversion processing program which allows image conversion processing, for converting original image data represented by a predetermined number of pixels to image data

representing an image by a set number of pixels, to be executed by a computer, comprising:

a first step in which a first, initial image conversion, without previously enlarging which controls said original image data to said predetermined number of pixels, is effected by obtaining, by interpolation calculation, image data represented by pixels of a number which is one-half of the predetermined number of pixels from the original image data represented by the predetermined number of pixels, and an intermediate image is prepared by repeatedly effecting the first, initial image conversion to one-half until a number of pixels close to a required number of pixels is reached; and

a second step in which a second image conversion is effected by obtaining image data represented by a required number of pixels from the intermediate image prepared in said first, initial step.

15.   (*Previously presented*) An image conversion processing program which allows image conversion processing, for converting original image data represented by a predetermined number of pixels to image data representing an image by a set number of pixels, to be executed by a computer, comprising:

a first step in which image data, which is represented by a number of pixels which is reduced to

1/N (wherein N is an integer of 2 or more) of the predetermined number of pixels, is obtained by interpolation calculation from original image data represented by the predetermined number of pixels, by using an N-size filter used for obtaining an interpolated point from N pixels; and

a second step in which image data represented by a required number of pixels is obtained by carrying out said first step in plural stages.

16.   (*Original*) A recording medium on which the image conversion processing program according to claim 14 is recorded.

17.   (*Original*) A recording medium on which the image conversion processing program according to claim 15 is recorded.

18.   (*Previously presented*) An image conversion method in which image data represented by a required number of pixels is obtained from original image data represented by a predetermined number of pixels, comprising the steps of:

repeatedly carrying out a first, initial image conversion, without previously enlarging which controls said original image data to said

predetermined number of pixels, which obtains, by interpolation calculation and from initial image data, subsequent image data represented by a number of pixels which is one-half of the number of pixels of the initial image data, said first, initial image conversion being repeatedly carried out from the original image data until the number of pixels of image data obtained by the first, initial image conversion is near the required number of pixels; and

obtaining, from image data of the number of pixels near the required number of pixels, image data represented by the required number of pixels.

19. (*Previously presented*) An image conversion method in which image data represented by a required number of pixels is obtained from original image data represented by a predetermined number of pixels, comprising the steps of:

carrying out a first image conversion by obtaining, by a first interpolation calculation, image data represented by a number of pixels which is one-half of the predetermined number of pixels, from the original image data represented by the predetermined number of pixels;

preparing an intermediate image by repeatedly carrying out the first image conversion at a rate of one-half of the number of pixels, until a number of pixels close to the required number is reached; and

carrying out a second image conversion by obtaining, from the intermediate image, image data represented by the required_number of pixels;

wherein said step of carrying out conversion by obtaining, from the intermediate image, image data represented by the required number of pixels performs conversion at a rate of x (wherein 1>x>½).

20.   (*Previously presented*) The image conversion apparatus according to claim 11, wherein said second image conversion to further make the intermediate image into the set number of pixels performs conversion at a rate of x (wherein 1>x>½).

21.   (*Previously presented*) An image conversion method in which image data represented by a required number of pixels is obtained from original image data represented by a predetermined number of pixels, comprising the steps of:

carrying out a first image conversion by obtaining, by a first interpolation calculation, image data represented by a number of pixels

which is one-half of the predetermined number of pixels, from the original image data represented by the predetermined number of pixels;

preparing an intermediate image by repeatedly carrying out the first image conversion at a rate of one-half of the number of pixels, until a number of pixels close to the required number is reached; and

carrying out a second image conversion by obtaining, from the intermediate image, image data represented by the required number of pixels;

wherein the first and second interpolation calculations are carried out by using at least two types of interpolation calculation methods;

wherein the first interpolation calculation performs high-speed conversion and a the second interpolation calculation, which is performed subsequent to said first interpolation calculation, is for preserving image quality.

22.   (*Previously presented*) The image conversion method according to claim 10, wherein a first type of interpolation performs high-speed conversion and a second type of interpolation, which is performed subsequent to said first type, is for preserving image quality.